10/568827

IAP20 Rec'd PCT/PTO 22 FEB 2006

Plant-derived peptides harboring water-cleaning and antimicrobial activities

The present application claims a priority based on international patent application PCT/03/00568. The content of said priority application is hereby incorporated by reference.

Field of the invention

The present invention relates to a family of proteins which may be used for different purposes such as coagulation agents for water treatment or as antimicrobial agents.

State of the art

A protein corresponding to the above-cited definition, called FLO, is disclosed in PCT patent application WO 03/008441 A2 (OPTIMA ENVIRONNEMENT S.A.).

Summary of the invention

The present invention concerns derivatives of FLO which, surprisingly, show similar or higher coagulating or antimicrobial activities than FLO.

The inventors have also unexpectedly found that some of those derivatives may show either a coagulating or an antimicrobial activity.

Finally, it was found that other FLO derivatives had neither a coagulating nor an antimicrobial activity.

5   <u>Detailed description of the invention</u>

Table 1 summarizes the derivatives of FLO representing the object of the invention.

The following terms are used :

+++   higher activity than FLO

10   ++   equivalent activity of FLO

+   lower activity than FLO

-      no activity observed

15   More information regarding the detailed description of the invention (e.g. material & methods, experimental results) can be found in international patent application PCT/CH03/00568 which is incorporated by reference.

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Table 1

Coag.   antibt.

Flo
QGPGRQPDFQRCGQQLRNISPPQRCPSLRQAVQLTHQQQGQVGPQQVRQMYRVASNIPST   ++   ++

predicted alpha helices
XXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX   .   XXXXXXXXXXXXX

Positive charge
    +   +   +   +   +   (+)   +   +

Glutamine (Gln)
Q   Q   Q   QQ   Q   Q   Q   QQQ Q   QQ   Q

Hydrophobic
            F   C   L   I   C   L   AV L   V   V   M   VA   I

Gln/Hydrophobic
Q   Q   FQ C   QQL   I   Q   C   L   QAVQL   QQQ Q V   QQV QM   VA   I

P1
QGPGRQPDFQRCGQQLRNISPP   -   +/-

P2   PQRCPSLRQAVQLTHQQQGQV   ++   +

P3   GQVGPQQVRQMYRVASNIPST   -   -

P2.1   RCGQQLRNISPPQRCPSLRQAVQLTHQQQGQ   -   +++

P2a   PQRCPSLRQAV   -   -

P2b   SLRQAVQLTHQ   -   -

P2c   AVQLTHQQQGQV   -   -

P2ab   PQRCPSLRQAVQLTHQ   ++   +/-

P2GR40   '   PQRCPSLRQAVQLTHQQQ<u>R</u>QV   +++   ++